REMARKS

Formal Amendments to the Claims

The claims have been amended, including to remedy the stated basis of objection and rejection under section 112, second paragraph. No new matter is entered by these amendments.

Withdrawal of the claim objection and rejection under section 112, second paragraph is solicited.

Claim Rejections - 35 USC § 103

Claims 1, 3-6, 8-13, 16, 17, and 20-27 were rejected under 35 U.S.C. 1 03(a) as being unpatentable over US Patent 6,481,973 to Struthers in view of US Patent 4,945,491 to Rishel.

Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Struthers in view of Rishel as applied to claims 1 and 13, and further in view of US Patent 2,462,076 to Dryden.

The rejections are traversed.

The Response to Arguments portion of the Official Action states that Applicant's arguments filed 2 February 2010 have been fully considered but they are not persuasive.

The Examiner states that with respect to Applicant's argument that the references do not teach a speed at which liquid moved per energy expended is maximum and the claims are therefore non-obvious, the Examiner disagrees.

The Examiner's position is that Struthers does teach starting rotation of the pumps at a "standard speed" as cited

above. The method for selecting this speed and its nature are not specified. Given that those of ordinary skill in the art are aware of the desirability of minimizing energy usage of all types of installations, the efficiency calculations which Rishel teaches would indicate the desirability and obviousness of the claimed optimized speed. One of ordinary skill would appreciate that the standard speed is particularly suitable for this optimization, since it is ideally the normal operating speed of the pump, thus leading the installation to use energy as efficiently as possible.

Applicant respectfully disagrees.

The Examiner states that the independent claims are obvious over Struthers in view of Rishel.

Struthers discloses a method for operating a variable-speed pump driven by a motor capable of developing high torque at low speeds. The method comprises attempting to run the pump at a selected speed. It is determined, by assessing the torque being generated by the motor, whether the pump is clogged. When the torque being developed by the motor exceeds a maximum for the selected speed, the speed of the pump is reduced and the maximum acceptable torque for the motor is thereby increased. The torque is then permitted to rise unless and until it exceeds a maximum for the newly selected speed.

The Examiner admits on page 3 of the Office Action that Struthers does not specifically teach to select a first rotation

speed at which the amount of transferred fluid relative to consumed energy is greatest.

Rishel discloses a method and apparatus by which the efficiency of a multi-pump pumping system may be accurately determined, and the individual pumps thereof selectively energized and de-energized to optimize the efficiency of the system.

In figure 1 and in the text passages explaining figure 1, Rishel describes a fixed speed pumping system in which individual pumps are energized and de-energized to optimize the efficiency of the pumping system.

Rishel teaches a method to determine efficiency of the pumping system in order to be able decide when to energize and when to de-energize one or more of the pumps.

Rishel does not teach that the "fixed speed" of the fixed speed pumping system would be a speed at which the amount of transferred fluid relative to consumed energy is greatest. In the embodiment shown in figure 1 of Rishel, the pumps 20 and 30 are driven with a three phase electrical supply and they are started and stopped by closing and opening switches S1 and S2 which connect and disconnect the pumps to and from an electrical supply network. Therefore, the fixed rotational speed of the pumps is determined by the frequency of the supply network and not by any efficiency considerations. Hence, in a pump system of Rishel the rotational speed of the pumps is not selected on the

basis of the efficiency but a different principle for optimizing the efficiency is applied, i.e., pumps within the pumping system are selectively energized and de-energized according to the wire-to-water efficiency determined according to the equation W = (Q × HS)/(K × E), whereby to operate the pumping system more efficiently, see column 3, lines 3-7.

The Examiner states on page 3 of the Office Action:

"Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select as a first operation speed, i.e. the standard speed, of the pump of Struthers a speed of maximum efficiency in order to minimize energy used and thus reduce costs."

The embodiment shown in figure 1 of Rishel cannot motivate a skilled person to select the "*standard speed*" mentioned by Struthers to be a speed at which the amount of transferred fluid relative to consumed energy is greatest, because in the embodiment shown in figure 1 of Rishel, the rotational speed is dictated by the frequency of the electrical supply network.

In figure 2 and in the text passages explaining figure 2 Rishel describes a variable speed pumping system for which the following examples are given (see col. 10, lines 57-68, emphasis added):

"*A system parameter transmitter 102 is coupled to sump 17 via transducer 103 which monitors the level of fluid in sump*

17, whereby to cause the speed of pumps 20 and 30 to vary relative to the rate at which fluid flows into sump 17 from a source shown as a pipe 110. Alternatively, transmitter 102 and transducer 103 could be positioned downstream of outlet header 14 at delivery point 50, for example, to monitor pressure, flow, temperature, or level or the like thereat. Transmitter 102 provides a system parameter signal S which is utilized by a speed controller 100 to control the speed of variable speed pumps 20 and 30 as is well understood."

The underlined portions indicate that the pump speeds are varied on the basis of e.g. flow rate, pressure, temperature, level or the like. This is totally contrary to the idea recited in the independent claims of the present application according to which a pump rotation speed is selected to have a (single) first value at which the amount of transferred fluid relative to consumed energy is greatest, and the pump is driven at this single speed value when a certain limit is exceeded/gone under.

Rishel thus clearly teaches away from the present invention.

Therefore, the embodiment shown in figure 2 of Rishel cannot motivate a skilled person to select the "*standard speed*" mentioned by Struthers to be a speed at which the amount of transferred fluid relative to consumed energy is greatest, because in the embodiment shown in figure 2 of Rishel, the rotational speed is varied and thereby not kept in any fixed

value such as e.g. the speed at which the amount of transferred fluid relative to consumed energy is greatest.

Rishel does not teach to select a particular speed for optimizing the efficiency. Instead of this, Rishel selectively energizes and de-energizes pumps within a pumping system according to the wire-to-water efficiency determined according to the equation $W = (Q \times HS)/(K \times E)$, whereby to operate the pumping system more efficiently, see column 3, lines 3-7.

If one applies the teaching of Rishel to the teaching of Struthers, the result would be such that pumps are selectively energized and de-energized according to wire-to-water efficiency determined according to the equation $W = (Q \times HS)/(K \times E)$ and energized pumps are running at the “standard speed”. This combination does not disclose all the limitations of the independent claims of the present application. Hence, Struthers and Rishel, when seen as a combination, do not teach all the limitations of the independent claims.

Thus, the independent claims are clearly non-obvious over the cited prior art, and thus they are patentable. The dependent claims are patentable along with the respective independent ones.

Reconsideration and allowance of the claims are respectfully requested.

This response is believed to be fully responsive and to put the case in condition for allowance. Entry of the amendment,

and an early and favorable action on the merits, are earnestly requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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